EX PARTE OR LATE FILED ORIGINAL RECEIVED

JAN 29 1998

Federal Communications Commission
Office of Secretary

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Complaint of Discrimination on the Basis of Handicap Filed by the Cellular Phone Taskforce on Feb. 2, 1997	)	Disabilities Issues Taskforce
	)	
Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation	)	ET Docket 93-62

COMMENTS (EX PARTE)

These Comments are in support of the Appeal of the Cellular Phone Taskforce in the above-referenced Discrimination case, and are also submitted as Ex Parte Comments in ET Docket No. 93-62. Attached is a 1993 press release on the official investigation into the "Taos Hum" which is an effort by Sandia and Los Alamos National Laboratories, Air Force's Phillips Laboratory, and the University of New Mexico and is still ongoing. "Team members say some people could be unusually sensitive to radio frequency or microwave radiation from the growing volume of electromagnetic noise as society relies more and more on electric gadgets, microwave communications and cordless devices", says the press release. The team presently (1998) has a list of over 3,000 hum hearers from far and wide, illustrating the extent of official knowledge of this problem.

Also attached, and supplementing Appendix D submitted in this matter with Notice and Comments of November 24, 1997, are Vol. 1, Nos. 1-3 of Electrical Sensitivity News. Vol. 1, No. 2 contains additional material on the "Taos Hum."

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Respectfully submitted,

Arthur Firstenberg

Date: January 28, 1998
original + 4 copies

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I affirm that the foregoing Comments are true and correct, and I certify that I have mailed a copy of said Comments by Express Mail this 28th day of January, 1998 to Dr. Robert Cleveland, Jr., 2000 M Street, N.W., Room 266, Washington, DC 20554.

Arthur Firstenberg

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Embargoed until:
August 23, 1993

Hum Investigation: Source Still Unknown, Questions Raised

Scientists and engineers investigating the "Taos Hum" did not detect the source of the mysterious and annoying sound heard by some Taos area residents, but they continue to believe the phenomenon is real. Their report, released today, raises questions about the area's electric power grid and the proliferation of electromagnetic noise.

In the next stage of the investigation, scientists will focus on how the ear perceives low-frequency energy.

"It's a scientific mystery, which is evolving," says Jim Kelly, a hearing specialist at the University of New Mexico School of Medicine. "We're not going to drop the ball on this investigation. If anything, it's more interesting rather than less."

The low-frequency hum, which hearers liken to an idling diesel engine, began in the Taos area in the spring of 1991, although Albuquerque residents have complained of a similar sound since 1989. Publicity about the Taos hum has prompted hundreds of calls from sufferers all over the country. For some, the hum is a small annoyance; others have suffered pressure on the ears, nose bleeds, dizziness and headaches. All say the hum disturbs their sleep.

Following complaints from residents in the Taos area, Congressional representatives asked the national laboratories to look into it. A team was formed of scientists and engineers from Sandia and Los Alamos national laboratories, Phillips Laboratory and UNM.

During the last week in May, team members, accompanied by Taos residents who sense the hum, used highly sensitive equipment to detect, measure and record acoustic, electromagnetic, and seismic signals -- all the known energy sources of sounds or vibrations. They took measurements in four locations where hearers sense the hum strongly -- the home of Bob and Catanya Saltzman south of Ranchos de Taos, the Taos golf course, three sites in the Tres Piedras area west of Taos, and, at a later date, sites near Lumberton and El Rito.

Measurements revealed nothing dramatic or obvious in Taos, although team members were able to rule out external sound.

"There was nothing unusual," says Joe Mullins, a UNM mechanical engineering professor. "There were no large signals we don't see other places, nothing out of the ordinary."

The team specifically looked for electromagnetic signals that might indicate radar, ELF (extremely low frequency) radio transmissions, or other Department of Defense activities and found none.

"We're not saying it's all in their heads," says Horace Poteet, of Sandia National Laboratories, who can also sense the hum. "We were not able to detect a source corresponding to what they're hearing."

Team members say some people could be unusually sensitive to radio frequency or microwave radiation from the growing volume of electromagnetic noise as society relies more and more on electric gadgets, microwave communications and cordless devices.

"It's a fact that we're slowly building up the background of electromagnetic noise," says Mullins. "We're going to more and more cordless things -- all electromagnetic transmitters. Whether that's the cause of the hum, we don't know, but we can't write it off."

One curious aspect of readings taken in the field north of the Saltzman house was the high levels of 60-hertz signals and their harmonics (signals at 120 hertz, 180 hertz and other multiples). (Hertz is a measure of frequency.) Measurements showed that these signals were present on the Taos area electric power grid.

"It was apparent that stray fields along the ground were quite strong, even well away from any power lines," according to the team's report. "However, there were no firm indications that the presence of these strong overtones were somehow responsible for the hum."

The hum, a bona fide scientific mystery, deserves additional inquiry, the report says. Because external, physical possibilities have been examined, UNM scientists now want to look at the human side of the puzzle -- hearers themselves -- as the best remaining approach to identify the source. Possibilities include unusual hearing sensitivities, effects on ears from some interaction with the environment, or disorders of low-frequency hearing. They may even find that the ears have a new way of perceiving energy.

The goal of this research is to identify the source of the

hum, internal or external to the ear, and to suggest ways to reduce its impact on sufferers.

Kelly dismisses hearing impairments like tinnitus, which causes a high-frequency ringing in the ears, as the likely source of the hum, but he is interested in otoacoustic emissions, or sounds actually produced by the ear. Most studies of this phenomenon ignore frequences below 250 hertz, and little is known about the region of the inner ear that receives low-frequency sounds.

The receptor cells of the cochlea, in the inner ear, are the subjects of increasing interest. In the last ten years, scientists have learned that they don't just receive sound but vibrate actively and can be provoked or tuned to resonate at particular frequencies. Something in the environment may be causing people's ears to emit sounds they can then hear, according to the report.

Another factor is that humans can focus on particular sounds; this is known to increase perception of a sound, especially an annoying one. The brain may do this, scientists have learned, by changing physical properties of the inner ear's receptor cells.

"It's not surprising that people can select for the hum. If they're distubed by a sound, they may selectively attend to it," says Jim Kelly. "Otoacoustic emissions are also extremely important. They're a carefully studied phenomenon in hearing science. That's why we're focusing on them. They're the best candidate for this."

"We'd like to help people who are suffering, and obviously there is something to be learned here," says Mullins. ###

ELECTRICAL SENSITIVITY NEWS

An international newsletter about the latest environmental illness—electrical sensitivity from electromagnetic fields

January - February 1996 **Vol. 1, No. 1**

What are Electrical Sensitivities?

Dr. Jean A. Monro, Medical Director
Breakspear Hospital - England

Many of the patients attending the Breakspear Hospital suffer from sensitivities to certain foods and environmental chemicals which cause them discomfort, or even in extreme cases, prevent them from functioning in any effective manner. Even the most minute amounts of these substances may on occasions trigger reactions which are specific to each individual. Then, some regulatory system within the body ceases to function, or gives alarm signals calling for an unjustified panic reaction.

A therapy for alleviating these reactions is called provocation/neutralisation therapy. It was developed from earlier work in the U.S.A. by Dr. Joseph Miller of Mobile, Alabama, and further developed in the U.K. by Dr. Jean Monro. It relies on successive serial dilutions of the substance having in sequence the effects of stimulating and quelling the reactions that it produces. This therapy is not a substitute for eventually reducing the total body loading of triggering substances to a level that the individual can cope with, but it can produce a more immediate alleviation of the symptoms.

When patients have acquired a high degree of sensitivity to many things (multiple sensitivities), as evidenced by having 'end-points' (or neutralising dilutions) of 8-10 or greater, they are very likely to have an abnormal sensitivity to electrical things included in the 'package' of symptoms.

They may find weather changes and impending thunderstorms troublesome. Fluorescent lighting may make shopping difficult, particularly if inhalants, such as preservatives on fabrics provide the initial trigger. There may be problems which arise when the person is near electrical equipment, power lines, TV's, recorders, computers or other electronics. A person may even be aware of actually having electrical things malfunction when handled or being in their vicinity.

The most common symptoms likely to be triggered electrically are: blushing easily, 'noises' in the ears or head, 'pins or needles' in the hands and feet, concern about the heart, palpitations, diarrhoea, bad headaches, general aches and pains, exhaustion and weariness, sleep does not refresh, and an unreasonable concern about health. These are also the symptoms that the homeopathic potencies of electricity, magnetism and x-rays will cure in the sick, and trigger as 'proving symptoms' in the healthy. Hence the hazard of chronic over-exposure to electrical fields is that of 'adaption' to the 'proving symptoms'.

Just as abnormal food and chemical sensitivities can be tested for, so can electrical ones. The procedure is simply to sit in the same room as an electrical oscillator at about TV viewing distance. The tester then tunes the oscillator through all the frequencies likely to be giving problems. This is usually from less than the heart rate frequency of 1 Hertz (cycle per second) to more than 1 GHz (one-billion cycles per second). The patient reports on any symptoms felt. These will usually be the same as those triggered during the foods and chemical testing. The frequencies at which the symptoms are triggered and neutralised are recorded.

There are usually one or more frequencies at which all the symptoms clear up. In addition, pa-

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WARNING: Environmental illness is a complex topic.
Methods or treatments that benefit some people may harm you. Readers are advised to consult appropriate medical, legal, or other professionals for personal guidance prior to making changes in their current program.

tients often get great relief in realising that symptoms that they have suffered from for years can be turned on, and off, at will from an electrical oscillator, not connected up to them in any way.

A tube of saline is exposed to a magnetic field at this neutralising frequency. It then becomes as clinically effective as an end-point dilution, and can be used in exactly the same way. The usual recommendation is for the patient to hold the tube for 5 minutes, morning and evening, and whenever challenged by electrical things in the environment. However, if the tube is held during a strong reaction, on subsequent use it may be found to have become ineffective, or even to provoke symptoms. This is because the patients own electrical fields have overwritten it with their reaction signals. The tube can easily be replaced by post. It is recommended that a spare tube be kept in a refrigerator for such an event. It is our experience that tubes usually remain effective for a month or two.

As the foods and chemicals sensitivities come under control and the body detoxifies itself, the electrical sensitivities usually go as well. However, it is worth noting that if the person is working or sleeping in a zone of 'geopathic stress' which may be electrical in origin, then things may persist.

(Dr. Jean A. Monro, MB, BS, MRCS, LRCP, FAAEM, DIBEM, MACOEM is the Medical Director at Breakspear Hospital, Belswains Lane, Hemel Hempstead, Herts HP3 9HP, England; Phone: 01442-61333, Fax: 01442-66388.

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Are You Electrically Sensitive?

Lucinda Grant

Do you sense energy fields? Have you ever felt stressful, confused, or hyper in a particular place and did not know why? Did returning to that place produce the same feeling again? Maybe you experienced how electromagnetic fields in our environment can affect us.

Several television programs in recent years have documented the on-going debate over whether electromagnetic fields (EMFs) in our environment can cause cancer. The U.S. government document Questions and Answers About EMF dated January, 1995, asserts that power line radiation has been shown to promote the growth of some existing cancers under laboratory conditions, but questions whether EMFs are a cancer cause.[1]

Beyond the cancer question, some people know that electromagnetic fields are biologically active and can sense these fields, with accompanying health effects. When electromagnetic field exposure gives you a headache, makes you feel ill, fatigued, or unable to sleep, this environmental illness is called electrical sensitivity.

Environmental illness or EI has generally been associated with chemical sensitivity and the Sick Building Syndrome. Electrical sensitivity is also an environmental illness, but this illness is triggered by EMF exposures rather than chemical exposures.

How do people become electrically sensitive? The human body is electromagnetic and can be influenced by small changes in its electrical environment. Exposing the body to long periods of high-level EMFs is one pathway to ES. Chemically sensitive people are also very predisposed to ES. Electrical sensitivity appears to me to be primarily a disease of neurotoxicity from chemical poisoning, heavy metal poisoning, or radiation poisoning.

In 1992, the Swedish National Institute of Occupational Health reported on their study of power line and substation workers, over 700 people in 40 companies. The workers were medically evaluated when hired and then every three years. At the end of six years, physical examinations did not indicate nervous system or circulatory system effects. "However, on the questionnaires the workers themselves have complained of fatigue, headaches, dizziness, and nausea," study data collector, Rose-Marie Högström stated. Also, Russian scientists were mentioned as observers of similar effects.[2]

Nervous system problems such as headaches, insomnia, seizures, paralysis, tingling or prickling on the skin, difficulty concentrating, dizziness, etc. are common electrical sensitivity symptoms when EMF exposed. A U.S. medical study of ES patients, entitled "Electromagnetic Field Sensitivity" by Dr. William J. Rea, et al, demonstrated nervous system reactions as predominant when EMF exposed.[3] A recent American Medical Association report called Effects of Electric and Magnetic Fields notes nervous system changes under electric and magnetic field exposures, as well as brain seizure induction under magnetic field conditions.[4] Although the American Medical Association has not yet officially recognized electrical sensitivity, the U.S. government booklet Questions and Answers about EMF states that "Some studies have also investigated the possibility that certain sensitive individuals may experience allergic-type reactions to EMFs, known

as 'electrosensitivity'."[1]

How are the ES able to cope in our modern world? When ES becomes extreme—a person senses and becomes ill from the refrigerator's EMFs at 15 feet—the consequences are disabling. If you can become ill from EMF exposure while driving or just being in a car, using a phone, and/or typing at a computer, your social life and work options easily become very limiting and isolating. Some people are also homeless, running from the rapid proliferation of cellular phone towers and other transmitters that they are sensitized to. And where shall they go?

Because ES is an international health problem, support groups have sprung up in Germany, Sweden, Denmark, Norway, and the U.S. The Electrical Sensitivity Network in the U.S. is actively seeking more information about ES. The Network recently completed a national survey to learn more about how ES occurs, how the ES are coping, and what their needs are. If you would like a copy of the survey results, when available, write to Electrical Sensitivity Network, PO Box 4146, Prescott AZ 86302, USA. (U.S. requests, please enclose a stamped, self-addressed envelope using two stamps.)

References

1. National Institute of Environmental Health Sciences and U.S. Dept. of Energy, Questions and Answers About EMF: Electric and Magnetic Fields Associated with the Use of Electric Power, January 1995.
Contact: EMF Infoline (U.S. Environmental Protection Agency) Phone: 1-800-363-2383; in Washington D.C.: 484-1803. Foreign requests or multiple copy requests, contact Superintendent of Documents, U.S. Government Printing Office, Washington D.C. 20402 USA, Phone: 202-512-1800.

2. The Swedish National Institute of Occupational Health, Forskning and Praktik, English Edition, 7/1992, pp. 13-15.
Contact: Förlagstjänst, National Institute of Occupational Health, 171 84 Solna, Sweden.

3. Rea, William J., M.D., F.A.C.S., et al. "Electromagnetic Field Sensitivity." Journal of Bioelectricity, Volume 10 (1 and 2), 1991, pp. 241-256.

4. American Medical Association, Effects of Electric and Magnetic Fields, Report 7 of the Council on Scientific Affairs (I-94), (Reference Committee E).
Contact: Council on Scientific Affairs, American Medical Association, 515 N. State St., Chicago, IL 60610, Phone: 312-464-5046.

Chemical Crisis

Diana Crumpler, Victorian Co-ordinator of Australian Chemical Trauma Alliance (ACTA)

In 1986, after many years of chronic, ever-worsening illness, I was diagnosed as being chemically sensitive. I did make a great step towards wellness with the elimination of the main incitants for these reactions, under the care of Victoria's premier clinical ecologist. However, about 1988, I began to suspect that electrical appliances—indeed, even the power field within the house walls from the wiring—were also triggering adverse reactions. (I discovered this by sheer serendipity: after a massive reaction that left me part-paralysed—organochlorine drift from sub-floor termiticides used in the construction of a neighbouring house—we had fled town and moved to a farm, where we were without power for several months. With 'masking' removed, cause and effect became obvious when our little generator was turned on for lighting each night.) Not even my ecologist could help, and we were left to try and work the EMR (electromagnetic radiation) sensitivity out ourselves.

Luckily, my husband is an ex-RAAF radio communications technician. He had a good understanding of this area and was able to sort much of it out. He devised wiring configurations to minimise my EMR exposure, ran the last of the power lines underground when SEC power did eventually arrive, and by minimising contact with electrical appliances in day-to-day living, thought that we had more or less brought the problem under control. Although EMR sensitivity did flare again badly when my chemical load was high, it stabilised readily enough once that burden was eased.

This time last year, however, I had a massive reaction to unsolicited chemical exposure, whereupon my EMR sensitivity has worsened to the level that I have now lost tolerance of the phone (literally, my lifeline to the world, for the degree of my chemical sensitivity forces me to live in virtual isolation), the TV (even from several rooms away), the radio, every electrical appliance, even incandescent lighting (Fluorescent lights have long been a no-no.), and a host of other appliances, including the car. I have also lost tolerance of sunlight, must now hang the washing out in the dark, and have had to cover the house windows.

The trigger for this slide down the gurgler was a reaction to pesticides, long my main chemical

bogey. My husband had spent the day handling seed grain which we were assured had not been pesticided. However, when he walked in the door that night I had a violent reaction to him and subsequent investigation led to the vendor admitting that, yes, the grain had been fumigated (as if we didn't know by then!!), but that it was months ago and the Ag Dept says it is safe to feed to stock after a few days, so there couldn't possibly be any dichlorvos left in it. Almost a case of famous last words! It took me months to gradually recover from the devastating reaction, and it was three months before I could even be in the same room as my husband again. Such is life with MCS (multiple chemical sensitivity).

But, as I say, the lasting legacy of that reaction has been the ever-worsening sensitivity to EMR. The final straw for my tolerance came with another severe reaction to laser-grading on the next property. It would appear that we are looking at a synergistic effect, at the multiplicatory effect of chemicals and electromagnetic radiation—that both are potent environmental stressors which act in concert to elicit reactions and sensitise certain pre-disposed individuals.

- Part One of Two -

(Diana Crumpler is author of the book Chemical Crisis, an analysis of multiple chemical sensitivity and how chemical exposures have devastated her family's health. Chemical Crisis is available from Diana Crumpler, RSD Tennyson, Victoria 3572, Australia; cost A$24.95 plus A$10.20 air mail. Send her an international money order in Australian currency.)

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HELP!!

Lucy Guillen - USA

I am MCS and ES. I struggled with the power company for 2 years trying to get them to move a ground-based transformer out of my front yard. I could not live in my home at all during the summer months because of the EMF. I stayed in a pop-up (tent) in the back yard.

The power company refused to do anything. I tried to get help from the utility commission, they did not want to help, ignored my phone calls and were rude. Our Senator Cochran wrote some letters for me but they were no help. I made one call to the Attorney General's office of Mike Moore and his office got it moved by making one call to the power company. I tried everything before calling the Attorney General—the Health Dept., letters from Dr. William Rea—and nothing brought any response from the power company but our democratic Attorney General. I will not go into the expense involved at this time. We also had a grounding problem that the power company would not tell us about that had to be corrected.

There are still underground power lines running through my front yard. I can now only live in the far back half of my home in the summer months because of the EMF from the underground lines. I have asked the power company to add some grounding rods to the underground lines to pull some of the EMF away from my house. They refused to do anything and ignore my letters.

Does anyone have any suggestions about how I should proceed with this or how else to lower the fields even just a little from the underground lines? I do not have a lot of money to spend on this.

If you can help me, anyone out there, please contact me. All magnetic therapies, machines, polarizers, etc. make me worse.

Lucy Guillen
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EMF Diary - Sweden

Leif Södergren

August 26, 1995

BIG SORES IN FACE - IMAGINATION?

The AFTONBLADET evening newspaper showed a full page in colour of the face of Christin Weenberg, when she was severely disfigured by inflamed sores. She developed the red and pus-filled sores when using a VDT. The newspaper also showed a picture of how she looks now, very stylish and pretty after having recovered. She has been given alternative work.

Despite her terrible condition, sores and all, she was told she imagined things. "Thank God I had a boss and co-workers who believed me. Or I probably would have ended up in a psychiatric ward," she said.

September 6, 1995

SIF UNION ESTABLISHES CONTACT WITH GOVERNMENT

On Monday, September 4, 1995, Christin Weenberg and Bruno Hagi were summoned to visit the minister of Social Welfare in Stockholm. Bruno Hagi works for SIF, the union that originally published the brochure with Christin Wennberg's disfigured-from-VDT-radiation-face on the cover of their brochure on electrical sensitivity. He felt that it was necessary to show her face (It is a terrifying picture.) in order to counter all the talk of psychological factors.

The minister, Ingela Thalen, had invited them, having no doubt seen Christin's face in the AFTONBLADET newspaper. One picture says more than a thousand words apparently.

The minister was told by Bruno Hagi that the Socialsyrelsen's psychological interpretation had meant great hardships for the electrically sensitive. She promised to "send signals" downwards to stop this. There is now a direct communication link between this union and the government. This one union has done what the white collar union's top organization (TCO) should have done ten years ago. Well done Bruno Hagi at SIF!

October 4, 1995

EUROPEAN CONCERN FOR DANGERS FROM CELLULAR PHONES

SVENSKA DAGBLADET newspaper, reports that an expert group on behalf of the EU commission will look into possible risks from cellular (microwave) phones. One of the experts is Kjell Hansson Mild at the Work Life Institute in Umea, Sweden. He has spoken to many cellular phone users who say that they experience the same symptoms as electrically sensitive individuals get from electricity. There is a particular interest in the GSM (digital) technique which gives off energy (pulsed 217 times per second) with a stronger biological impact that the old analog technique. The group will have some preliminary results this spring.

(The article entitled "EMF Diary - Sweden"

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Letter to U.S. Dept. of Energy

Sarah Morris - USA

I have been seriously biologically impacted from electromagnetic radiation since 1980. At that time, EMF awareness was confined to a few scientists and the government. Since then, I have been on a journey. My odyssey has taken me from the point of isolated suffering to a time when I am now part of a grass-roots network around the country. I became an observer of some of the contributing factors in this escalating problem, and think I can offer a few suggestions that may help to reduce the effects of electromagnetic fields.

I think all of us have to focus on what we can do to help the existing situation. Obviously, not everyone wants to get rid of technology. So, the name of the game is moderation and COMPATIBILITY. How can we all co-exist without serious health problems which have reached epidemic proportions in this country and other countries from electromagnetic radiation and dangerous chemicals.

My few suggestions would be the following:

- *New construction codes for houses and buildings.* At the present time existing structures and new structures are very conductive. Materials which were once inert are not inert now because of magnetic fields in the atmosphere. For example, interior and exterior paint should no longer contain metal, as it can pick up a frequency. Houses should be built with natural materials such as wood or brick, of course without threatening our forest ecology. Aluminum siding and foil insulation become very "tricky" when it comes to interacting with fields. Aluminum gutters on homes can act as antennae. Wood or plastic gutters should be used instead. Building nails should be non-conductive. Property fencing should not be metal.
- *New codes for appliances.*
- *New codes for internal structural wiring.*
- *Radar precautions.* That it does not impact dwellings.
- *New codes for computers.*
- *Dentistry.* Restorations and root canals should not contain metal or mercury. A substance which is safe chemically and non-conductive should be used in the mouths of persons.
- *Automobiles.* Any fields given off inside a vehicle should be shielded. Cars should not interact with a person's own electrical physiology.
- *Power lines.* Should be made safe in neighborhoods by knowledgeable, experienced engineers who have worked this issue out thoroughly with physicists. Some costs could be passed back to the consumer with the explanation, "towards a healthy environment." When people are explained something in an intelligent way, their intellect can grasp more than they are given credit for.

- *New grounding methods for residential electricity.* We also have to be sure that construction being done on one home, does not alter the electrical field in the neighborhood.
- *Most important* - for the people who have been made terribly sick for a problem that has gone out of control, we have to offer medical care and emotional support. Take this problem out of the gray area, medically. To a degree, it is being handled a little now, but not enough.

We have to break the cycle by starting somewhere. We have to face this problem. Hopefully, my suggestions could develop some sort of environmental harmony, enough to have a cushioning effect. Let's work together to get our country healthy. Healthy citizens are a healthy country, and a healthy country is a prosperous economy.

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ENDNOTES

- **Germany** - Peter Sierck, founder of Environmental Testing and Technology, Encinitas, CA, recently returned from working in Germany. He found that several German insurance companies will pay a portion of the bill for environmental testing in the home, if doctor prescribed. These environmental tests were originally approved by the insurance companies to determine whether wood preservatives were a factor in the person's illness. Other chemicals, etc. can also be tested for now. One insurance company, DAK, will pay part of a home EMF evaluation, if doctor prescribed and part of an environmental analysis package.

- **Housing Needs Urgent** - In December several people contacted me about their need for EMF-safe housing. These requests are primarily from the Southwestern U.S., although housing is a national problem for the electrically sensitive. Often I find that the ES are living in an apartment—an electrical environment they cannot control. Some people are also being displaced from their living arrangements due to the increased cellular phone tower placements. If you have an EMF-safe home outside the cities with an extra bedroom available to rent, please write to the ES Network, PO Box 4146, Prescott AZ 86302.

- **Hot Foot Solved** - While other disability groups may consider themselves "physically challenged", I am continually reminded that we are environmentally challenged, and more precisely, electrically challenged. New challenges crop up each time factors in our environment change, with often unhappy consequences. A car accident about a year ago forced me to find another EMF-compatible car. Shortly after I located a replacement vehicle, I noticed that my right foot hurt, mostly when I was driving. I didn't know what to think at first. My foot developed a burning sensation on one spot just below my toes. This pain became more and more noticeable, not just while driving, but soon, any day after I drove. My foot never had this ES symptom before so initially I assumed it was not an electrical problem. Investigation of the truck, however, found a thick wire cable under the floor coverings within 2 inches of my right foot. Then I realized what I had—a hot spot, as an electrician would say. The EMFs from the wire were creating a concentrated heat directed at my foot creating the burning pain. This is an example of one way an ES condition can start. If nothing were done, the hot spot exposure would create a radiation burn that would be sensitive to heat of any kind in the future. Induction heating by future EMF contacts of various sorts could simulate the original burning pain. Luckily, I understood the problem and was able to correct it at no cost. I unbolted the floor coverings and pulled them back. Also, I tore back the truck's floor pad from its glued-down position to see the wire under it. To my great relief, the wire was not tight but had several extra inches loose—which meant I could move the wire. I untaped the wire from its position on the side of the truck's hump on the floor. Then I taped the wire to the top of the hump as far away from me as possible and put the floor coverings back. Hot foot solved!

- **EMF Technicians** - If you need to locate someone to help you reduce EMFs in your environment, contact either or both of the following to find an EMF technician in your area: National Electromagnetic Field Testing Association, 628-B Library Place, Evanston, IL 60201, Phone: (708) 475-3696 or International Institute for Bau-biologie and Ecology, Inc., Box 387, Clearwater, FL 34615, Phone: (813) 461-4371. The Bau-biologie Institute also holds occasional seminars about EMF reduction for people interested in becoming EMF technicians. Their next class, called Electro-Biologie and Ecology, is February 15-19, 1996. Call them for details.

- **Important Document Available** - In November, 1994, I found out that the Labor Institute's booklet "Electromagnetic Fields (EMFs) in the Modern

Office" just went out of print. The Labor Institute is a union information center of the Oil, Chemical and Atomic Workers Local 8-149 in New York City.

I asked them to include electrical sensitivity in their next edition of the EMF booklet. The following is an excerpt from the letter I sent them:

November 19, 1994

Thank you for talking with me about Electrical Sensitivity (ES) on Friday!

As we discussed, enclosed are studies, surveys, and other documents referencing ES, which is an international problem. Papers enclosed are from the U.S., Germany, Sweden, Denmark, and England. I know of people in Canada with ES, and am awaiting information from Norway's ES group.

ES has the same medical/scientific/political hurdles as chemical sensitivity, and is often related to it.

The good news is that we have been formally recognized in the government document Electric Power Lines, enclosed. (See page 27.) Also, Sweden's central ES group, FEB, is now on the Internet, with a survey form (enclosed), and other informational sheets (see Technical Guide and Electrical Hypersensitivity booklets). TCO - Stockholm (the white-collar labor union) has an office in Chicago now and mention "oversensitivity to electricity" and "skin complaints" among their published concerns (enclosed).*

While science debates the health hazards of electromagnetic fields, ES patients can already tell you that refrigerators can be biologically active at 20 feet, computers through walls (magnetic field exposure), and power lines at minimal levels (that may not be measurable).

What the enclosed does not say is the great trouble ES patients have in coping and maintaining a normal life. Many are women who lose their job, support of the husband who does not believe or understand the problem—or cannot cope, lack of validation by their medical doctors, and inability to safely live in their present home. So we are talking sick, homeless, jobless, ridiculed, and little or no family support—many of the traumas of a terminally ill patient...

If you would like to confirm any information or need any other resources, please let me know. I've been ES six years and have done a lot of EMF research since then to find out what is going on.

We are counting on you to help bring ES out of the dark! Please include a summary of ES in your update of the EMF booklet at The Labor Institute. I hope that in the future, ES will warrant its own booklet, as MCS has done.

Gratefully,

Lucinda Grant

* (- *The booklet Electric Power Lines is available free from U.S. Dept. of Energy, Bonneville Power Administration, PO Box 3621, Portland OR 97208-3621.*

- *Sweden's central ES group FEB is available on the Internet at http://www.isy.liu.se/~tegen/febost.html .*

- *FEB's information sheets are also available through the ES Network for $3.00.*

- *TCO's office in Chicago is located at 150 N. Michigan Ave., Suite 1200, Chicago IL 60601-7594, Phone: (312) 781-6223, Fax: (312) 346-0683.)*

- *UPDATE* -

The new Labor Institute booklet is available! Called "Electromagnetic Fields (EMFS): A Training Workbook for Working People," this booklet states "And there is increasing awareness of a relatively new problem associated with EMFs—EMF hypersensitivity or electrical sensitivity (ES)—which may affect thousands in their workplaces and homes." They define ES as "...the experience of such symptoms as skin irritation and pain, dizziness, faintness, headaches, nausea and exhaustion after exposure to EMFs." (See page iv.) To order this booklet, write The Labor Institute, 853 Broadway, Room 2014, New York, NY 10003; USA price $3.00, foreign price $5.00 USD. Thank you, Labor Institute!

• **Directory of Professionals** - The letter on the back page of this newsletter is being mailed out in an effort to compile a future ES directory of professionals. Please send a copy of the letter to those you would like to see in the directory.

Lucinda Grant
PO Box 4146
Prescott, AZ 86302 USA

ELECTRICAL SENSITIVITY NETWORK

To: _____

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The Electrical Sensitivity Network is a national support and advocacy group for people with the latest environmental illness—electrical sensitivity from electromagnetic fields. A major goal of the Network is to assist the electrically sensitive (ES) in locating medical, legal, housing and electromagnetic field reduction resources. To facilitate this process, we are starting a directory of professionals and groups willing to be contacted by electrically sensitive people. These professionals will include doctors, lawyers, EMF technicians, etc., who are familiar with ES and can provide suitable assistance to those requesting help.

If you would like to be included in our directory, please provide us with a synopsis of your area of expertise, which may include occupation, degrees, professional affiliations, current contact information, etc. Also if you are willing to be an expert witness in court, let us know.

Please return this information to ESN, PO Box 4146, Prescott AZ 86302.

Sincerely,

Lucinda Grant

P.S. The new newsletter *Electrical Sensitivity News* is seeking pertinent articles for publication from informed sources. If you would like to submit an article about your current work with the ES or other related topics, write to the Network.

Notes: _____

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ELECTRICAL SENSITIVITY NEWS

An international newsletter about the latest environmental illness—electrical sensitivity from electromagnetic fields

March - April 1996 **Vol. 1, No. 2**

The Taos Hum

Lucinda Grant

On May 19, 1995 the popular national television show *Unsolved Mysteries* aired a segment called "Mysterious Hum" about people bothered by an unidentified humming noise. This show also broadcast on radio, where I heard it because my EMF sensitivity necessitates having no television operating in the house.

When the "Mysterious Hum" program aired, it reminded me of the phenomenon called "microwave hearing". Scientific studies since the 1960's have established that some people sense a noise or vibration in their head when exposed to pulsed microwaves.[1,2,3,4] The "Mysterious Hum" was suggestive of electrical sensitivity in another form.

The "Hum" is often called the Taos Hum in the U.S. because of the many vocal Hum hearers in the Taos, New Mexico area.[5,6] However, the Taos Hum is not limited to Taos as the *Unsolved Mysteries* staff found out. When I called the show for contact information, they recorded where I was calling from (city and state). This geographic information was forwarded to Schatzie Hubbell, a Hum hearer who mapped each caller's location. *Unsolved Mysteries* received 383 phone calls about the Taos Hum, representing nearly all 50 states and Canada. Of those who called, 174 said they hear a Hum. One hundred thirty-seven of those who called also wrote a letter, forwarded to Schatzie Hubbell. She mailed a survey form to 115 people and received 60 completed surveys.

There are many similarities in the survey responses. Forty percent (24) feel vibrations accompanying the Hum, 60% hear it most at night or early morning, and 63% have other symptoms such as headaches, inner ear pressure, tension, eye strain, or muscle spasm. Sixty-eight percent of the Hum survey respondents were women.

Taos Hum Symptoms:

- Primary
  - Senses/hears an unidentifiable noise often resembling a hum, buzz, motor, or electrical sound

- Secondary (possible accompanying symptoms)
  - Feeling a vibration
  - Headache
  - Insomnia
  - Intense head, temple, or ear pressure
  - Nausea
  - Fatigue
  - Tension
  - Dizziness
  - Heart palpitations
  - Difficulty concentrating
  - Skin burning
  - Blurred vision
  - Eye strain
  - Nose bleeds
  - Muscle spasms
  - Increased hair loss

The Hubbell survey identified several factors common to the Hum:

- Non-directional sound, sometimes mentioned as ground-based.
- Usually noise is worse indoors and lessens outside.
- Earplugs often don't help.
- Hum is often louder and more noticeable at night and early morning.
- Noise may vary in pitch and/or pulsate.
- Power outages or turning off the electricity to the house does not help. (If it does reduce the noise, this is a clear indication of an electrical source in or near your home.)

Electrical Sensitivity News (ISSN 1086-2897) is published bimonthly by Weldon Publishing, PO Box 4146, Prescott AZ 86302 USA. Annual subscription rates: $20.00 USA, $35.00 Foreign.
 Lucinda Grant, editor of the newsletter, is founder of the Electrical Sensitivity Network and author of *The Electrical Sensitivity Handbook*.

WARNING: Environmental illness is a complex topic.
Methods or treatments that benefit some people may harm you. Readers are advised to consult appropriate medical, legal, or other professionals for personal guidance prior to making changes in their current program.

Some of the Hum hearers said on *Unsolved Mysteries* and the survey that they believe the Taos Hum is EMF-based. Several possibilities were suggested: proximity to military bases or other radio/microwave transmission areas, living within an earthquake zone or near an earth fault, or the controversial U.S. Naval ELF (extremely low frequency) submarine communications system Project Seafarer/Sanguine.

Other artificial EMF sources are also possible Hum contributors. Robert O. Becker, M.D. reported in his book *The Body Electric* that the inception of the powerful, pulse-modulated Soviet radio signal begun July 4, 1976 correlated with an increase in characteristic Hum cases in the U.S. and Canada.[7] Lately, another Hum source may be the testing of Alaska's military project HAARP. HAARP is testing the feasibility of beaming powerful radio frequency (2.8-10MHz) into the ionosphere primarily for communication and detection purposes.[8]

Stray voltage from our electrical system that follows underground metal utility pipes and the Earth itself is another possible factor in Hum-like symptoms.[9,10] In the Proceedings of the First National Biomedical Sciences Instrumentation Symposium, 1963, the presentation entitled "Human Sensitivity to Electric Fields" reviewed a scientist's confrontation with three Hum-like cases.[10] An extensive investigation of one Hum hearer's home found strong harmonic frequencies from all utility lines (gas, electric, water, phone). Static electricity was also high near all alternating current equipment.

To reduce the static electricity and EMFs, grounding of all electrical equipment occurred, shielded wire installed for the phone, fluorescent light fixtures were grounded, and incoming water and gas pipes electrically insulated from the house. The homeowner found these reductions helped considerably, although not completely, in lessening the noise. Eventually she needed to move when the proliferation of all utility lines above and below ground increased in her neighborhood. The scientist who investigated and mitigated her home concluded that the ground currents in her neighborhood changed resulting in her perception of increased noise. The woman moved to a different area, moist and wooded instead of a dry climate, and with no underground pipes near her home. This area she found comfortable.

Some chemically sensitive people report hearing the Hum. One recently asked me what electrical sensitivity is, mentioning hearing "a persistent hum that sounds electrical" also noting that it vibrates her skull and earplugs do not reduce the noise. Of interest, certain chemical exposures can produce ringing in the ears: benzene, formaldehyde, phenol, etc.[11] Mercury toxicity from dental amalgams may also cause ringing in the ears.[12] However, the Taos Hum is more than a ringing in the ears. The words noise or sound have not adequately defined the problem when Hum hearers speak of the vibration and other effects that often accompany it. In scientific studies of microwave hearing, subjects with good bone conduction had better Hum "sensing" ability.[1,2]

Metal dental fillings have occasionally been known to act as a radio receiver with the wearer hearing a radio station broadcast. In those cases removal of the metal fillings stopped the sound. This sound was not the Taos Hum and Hum hearers have not found metal filling removal the answer to the noise.

For Hum relief, the Hubbell report suggested using a pocket radio with headphones (for those not sensitive to appliance EMFs) to temporarily drown out the Taos Hum. A Russian scientist reported that additional sounds heard with the microwave hearing effects do not reduce the Hum, but only reduce one's sensitivity to it. He also commented that ear plugs could magnify radio/microwave induced hearing.[13]

Scientific attempts to reduce Hum noise in the head found that in one instance a grounded wire connected to aluminum foil around a Hum hearer's head dropped the noise level. The person was sensitive to electrical and radio frequencies.[10] (**Warning:** Using a house ground in this way that is improperly wired can cause shock or electrocution.) Another scientist discovered that the temporal lobes (temples) of the head were most sensitive to radio-microwave frequencies. He shielded the temporal lobes with 2-inch pieces of flyscreen to eradicate the noise.[2] (Interestingly, another American scientist found the temporal lobe area sensitive to 58.55 MHz radio frequency during an investigation of dowsing.)[14]

Hum effects are also common in England, often attributed to military radar or underground gas lines.[15] Curiously, Sweden's central electrical sensitivity group, FEB, has not found Hum cases in Sweden.

As microwave and other transmitters become more commonplace and electrical sources more numerous, Hum victims will undoubtedly increase. The Taos Hum is one more area of electrical sensitivity that needs medical and scientific investigation.

If you hear the Taos Hum, please complete the survey questionnaire on the back page of this

newsletter and return it to Schatzie Hubbell. Hum Survey form Copyright © 1995 by Schatzie Hubbell. Reprinted by permission.

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Hum Hearers Speak:

The Hum is a very mystifying and annoying phenomena. I first became aware of it about ten years ago. At first, it woke me during the night. I actually got up and went outside looking for the source, but found nothing. The air seemed to vibrate with it. I did not hear it every night, but maybe several times a month. I can't say when I began to hear it all the time, but when I did notice I was hearing it at different levels all the time, it seemed to have a pattern. It was not too bad in the morning but became more intense toward evening. Lately, it has no pattern that I can determine. It can be very loud in the morning and early afternoon easing up in the evening or it can be as it was at first. It can become loud suddenly or gradually. It can sound like the hum of traffic, a roaring waterfall, a loud generator, a jet engine or an erupting furnace. I also feel vibration with the sound and at the same intensity as the sound. In other words, the louder the sound, the stronger the vibration. It is worse inside than outside as if the whole house is vibrating with it. I cannot get closer to it or farther away from it. It is the same no matter where I am in the neighborhood. When it gets really loud, it frightens me. Until a few weeks ago, the loudest I had heard it was in New Mexico, not far from Taos. Now, it is as bad here in Santa Clarita (California). I have thought that it is related to electrical pollution because the vibration has about the same rhythm as that of electricity flowing through electric overhead lines. Electrical lines are underground here in Santa Clarita and the vibration seems to be coming through the ground as it did when I was in New Mexico. I have some hearing loss, which began at the same time the hum began so I'm not sure if there is a connection or if the hum just drowns out my hearing. I have seen neurologists, ENT's audiologists who, after conducting tests, tell me I have tinnitus. They define tinnitus as any noise in the head. This of course really means that they haven't the slightest clue as to what it is or what might be wrong with one's hearing apparatus. Of course, they are arrogantly sure it is a problem in the ear, not an environmental problem. I am the only person I know who hears and feels this hum. I know other people who have hearing loss but they do not hear noise. I will be going to the House Ear Clinic in Los Angeles in February to see what can be done for tinnitus. Although it is still in the study stages, it seems there are some experimental treatments. I will be happy to write again with the results of my visit to the clinic.

Shirley Potter

(Those who can use a computer may network with Shirley at the following E-mail address: AZED48A@PRODIGY.COM .)

Hello fellow Network members. My name is Sharon Eckhoff. Since roughly March of 1992 I have experienced tones, hums and other frightening and unpredictable noises. I began in San Diego, California. Over the last four years, I have been to Tennesee, Sacramento, California and all parts in between and found no escape. I have been desperate for information that might assist me in identifying the source and understanding what makes this physically possible. Along with the not necessarily welcomed ability to "hear", often I experience episodes of momentary sensations that are just like pressure changes. These sensations are much like those due to altitude changes and/or submergence in water. Often I experience these sensations just prior to or following changes in tone volumes and/or levels. I have chronic ear aches that are short in duration, but which are quite painful.

Most people tend to jump to conclusions concerning what may be the cause of this. If one is faced with assumptions everywhere they turn for help, they wind up being referred to a psychiatrist most times. I have tested various treatments for several chemical imbalances in the brain, so that people would see for themselves that they are not solutions. The cause has not been identified. It has been a slow process, but I am now beginning to receive opportunities to be heard by some intelligent, open minded people who realize that I am a valuable tool in accurately describing this experience. I have had psychological testing done showing a strong mind, superior intelligence capable of rational analysis and no brain damage. A thorough neurological exam and EEG were performed, and on those tests it was conclusive that it would be physically impossible to experience this as a "formed hallucination" without experiencing stimuli such as epileptic activity concurrently, which there is no evidence of. An MRI of my head shows "an unusual amount of activity in the pons area." I find it interesting that the pons is right next to the midbrain which I have read is capable of hearing, and that the "pons" is the "bridge" which carries transmissions of sensory information.

I have kept notes for the last two to two and a half years and am in the process of relating the whole four years through a manuscript. I have studied for patterns of any kind showing correlations to geographic location, environmental elements, diet, behavior, time, etc. and have not been able to isolate any catalyst that I may have any control over. I basically have to find a way to cope with it when and where it arbitrarily reaches unbearable extremes.

I have been trying to educate myself regarding all the components involved in what I experience. I have studied the anatomy of the brain and done a lot of reading to understand what functions each part performs. I have also been reading and studying physics and electronics.

I hope to continue to develop contacts, and at least in some way, become a part of the pioneering into identifying causes and solutions. In the meantime, there may be much to be shared amongst one another regarding coping skills and/or new habits we may have come up with to live this way without losing hope. I will also continue to arm myself with all the knowledge I can acquire.

Sometimes I am scared to death of what the rest of my life might be like. If we spend it banding together we will at least live it learning some interesting things. Maybe we can benefit from the extra stamina one must employ and the patience needed to keep from being miserable and consumed with anger. It is nice to know there are people who will listen without assuming that it is irrational to consider possibilities beyond insanity.

This is an invasion of what once was our God-given space. I hope we find a way to control whatever enables this form of pollution, or can at least demonstrate that it is a real danger and discomfort for which we are not fairly compensated.

I would be happy to hear from those who can relate and welcome any news regarding research. I would also be willing to subject myself to any tests that can be made available.

(Those who hear the Taos Hum and want to network with others similarly troubled may write to the ES Network, PO Box 4146, Prescott AZ 86302 for Hum contact information.)

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Neurontin® and Electrical Sensitivity

Name withheld by request

I first noticed something was wrong last November when I was using my personal computer at home. It was as if my arms were suddenly on fire. I turned the computer off and the sensation subsided several hours later. The next day I was interviewing a client at work, but could not remember what he said from one sentence to the next. The next time I tried to use the computer, it was my spine

that "caught on fire". I have not used the computer since. However, over the next month, I noticed reactions to the telephone, fluorescent lights, the TV, the refrigerator, power lines, and the car. My symptoms included sensations of cerebral swelling, visual disturbances, nausea, short term memory loss, confusion, sensations of heat and "pins and needles", muscular aches and pains, sensitivity to light and sound, distractibility, fatigue, depression, stinging eyes, chest pains, irritability, difficulty concentrating, and anxiety and panic with EMF exposures.

My worst day was when I reacted severely as a passenger in the backseat of a car going down a stretch of freeway lined with high-tension power lines. It felt like electric sparks were shooting through my hands and water was pouring on my brain. I felt totally overwhelmed. Shortly after this trip, I suddenly developed a shock of gray hair! By this time I knew I had symptoms characteristic of electromagnetic sensitivity (ES). I also became aware of the fact that my office was located right next to an electrical transformer. I had occupied that office for one year; now I quickly relocated it. I also developed a full blown case of multiple chemical sensitivities (MCS). Perfumes, detergents, room fresheners, carpet deodorizers, and pesticides were and still are the main triggers.

Somehow, I managed to learn about a medication (Neurontin®) that was helping some people with ES and/or MCS. I also learned about a condition called focal brain syndrome that can be detected in some ES and/or MCS patients. This condition is consistent with certain findings on a SPECT scan (single photon emission computerized tomography)—a test that I tolerated well. SPECT scan can show the level of cerebral blood flow throughout brain tissue and is used to determine patterns of activity in different parts of the brain. Patterns often encountered in patients with neurotoxic exposure can also be seen. In my case, temporal and frontal lobes were asymmetrical with more activity in the right lobes than the left.

Neurontin® is a relatively new anticonvulsant that was originally approved to treat epilepsy. It is similar in chemical structure to the neurotransmitter, GABA (gamma-amino butyric acid). Although the exact mechanism of action is unknown, one theory is that it acts on a receptor site where it reduces the potential for firing of specific brain chemicals. Doctors have had success with Neurontin® in treating reflex sympathetic dystrophy, restless leg syndrome, sleep disorders, diabetic neuropathy, and for pain management.

I have been on Neurontin® for just over a month. It has already significantly improved my ES symptoms. Though it has helped me a lot, I continue to practice prudent avoidance. For example, I drive with my car seat pushed back from the dashboard, and I use a headset on my home phone. I sit a good distance from the TV when it's on, and I don't linger near power lines! Previously, I couldn't drive, use a phone, watch TV, or approach a power line without becoming ES symptomatic. I have noticed that exposures to certain chemicals can temporarily increase my sensitivity to EMFs. It may take several months before Neurontin® works at an optimal level. It is very important that the patient work with the prescribing doctor to adjust dosage levels as needed. In any case, I believe it is important to reduce exposures to problem sources, whether electromagnetic or chemical.

(Editor's note: I spoke with another person who experienced symptoms of ES, MCS, and food allergies prior to the same Neurontin® therapy. One year after beginning the drug, she is ES symptom-free. Her MCS and food allergies are also greatly reduced. She continues to take the drug.

Neurontin® is a prescription drug from Parke-Davis (Address: 201 Tabor Rd., Morris Plains NJ 07950; Phone: 1-800-223-0432). It is a new anticonvulsant FDA approved for epilepsy treatment in February 1994. Some doctors are finding alternative uses for Neurontin®, including pain control of nerve injury.

Anticonvulsants in general have been associated with an increased risk of birth defects. Neurontin® also showed fetal toxicity in rabbit and rodent studies. Long term effects of this drug are unknown. For more information, consult your doctor.

The need is urgent for medical investigation of the Neurontin® therapy used for treating ES/MCS patients.

Parke-Davis has an indigent program to allow the poor access to Neurontin® treatment. To find out more about this program, call them at 1-800-755-0120.

Neurontin® is considered similar to the neurotransmitter GABA although it is reportedly not using GABA receptor sites in the brain. In rat brain, Neurontin® was found to bind with the neocortex and hippocampus. The drug's exact process of action is unknown. The link between GABA and electromagnetic fields was revealed in the 1994 publication of a Russian study detailing microwave effects on brain receptor sites. The Institute of Cell Biophysics at the Russian Academy of Sciences

found both GABA and glutamatergic synapses very sensitive to low-intensity microwaves.

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What Does Electromagnetic Sensitivity Have to do With Porphyria? - A biological detective story

Arthur Firstenberg - USA

For the first clue, we have the DePaul University MCS research team's survey of over 300 people with MCS which revealed that one-third of us report being electrically sensitive also. This surprised me, because to read all the different MCS newsletters and books, you would think electrical sensitivity was a rare and unrelated problem.

The second clue comes from mainstream medicine. A majority of the porphyria cases diagnosed in MCS patients are of the coproporphyria or variegate porphyria varieties.[1] According to conventional medicine, about one-third of all patients with these types of porphyria may be expected to be sensitive to light.[2] Now this is surely an amazing coincidence.

Part of the problem is semantic. Sunlight includes ultraviolet, visible, and infrared light. Summaries often misleadingly imply that only the Soret band of ultraviolet (400 to 410 nm wavelengths) is a problem for porphyrics. But in fact it is known that porphyrins in general, chlorophylls in plants, and people with certain kinds of porphyria react to a wide range of wavelengths well into the infrared, beyond 2600 nm.[3-6] This includes wavelengths used for communication, for example in assistive listening systems for the hearing impaired.[7] Now we are already getting into parts of the spectrum that are usually known as EMR and not light. When you call it photosensitivity you have a medical condition. When you call it EMR sensitivity you are called crazy. Infrared blends imperceptibly into longer radio wavelengths that nobody has bothered to look at, but circumstantial evidence points to the fact that all photosensitive porphyrics are probably sensitive to quanta of a much wider range of frequencies than anyone in the mainstream wants to know about.

But what is the theoretical basis for believing this, it will be asked. Here there are clues too. One comes from work done by Dr. Robert O. Becker[8]: a previously ignored part of the nervous system, having to do with such basic functions as healing and pain, relies on direct currents carried by perineural sheaths. Another clue is the porphyrins, complexed with zinc, that form part of these perineural sheaths. Researchers more mainstream than Dr. Becker have suggested a role in nerve conduction for these molecules.[9-11] The porphyrins involved are coproporphyrin III and protoporphyrin, precisely the porphyrins that accumulate in those forms of porphyria where there is photosensitivity.

Porphyrins chelate metals. So if we have an enzyme block and are accumulating excess porphyrins, they will bind whatever metals are around and we become easily poisoned. Presumably excess metals are deposited in the perineural sheaths along with the porphyrins, altering nerve conduction all over the body and accounting for many of the symptoms of MCS, including electrical sensitivity.

Why electrical sensitivity? Here the clues come from Dr. Becker's work, and the field of electronics. It happens that porphyrins, as well as many other of the chemicals of life, form liquid crystal systems in water, and as such are sensitive to electric and magnetic fields.[12] The direct current system discovered by Dr. Becker relies on biological semiconduction, which is exquisitely sensitive to metals. A slight increase in bound metal atoms could greatly increase the conductivity of the system and therefore the sensitivity to electromagnetic fields. Obviously the details of this system haven't been worked out, but metal-binding porphyrins are strongly implicated.

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EMF Hypersensitivity, Work Disability & Medical Diagnosis

Mary Okumura - USA

In the past I have spoken to many people who, like myself, were convinced our primary health problems were EMF and/or E (electric) field induced. When these hypersensitivities cross the threshold and inability to work and sustain a living are reached, the EMF affected find themselves in an even more difficult situation. Financial stress added to an already stressed immune system can create an even more severe illness. Obtaining a medical disability on the basis of EMF impacts may be near to impossible without involving a psychiatrist who indicates a diagnosis that we believe that we are affected by environmental factors rather than being of sound mind. Besides, how many ES even know an MD who would write that we are disabled from work due to an EMF hypersensitivity??

The EI/MCS (Environmentally Ill/Multiple Chemical Sensitivities) affected also have problems with obtaining diagnosis and disability; however with the appropriate medical doctor and appropriate testing enough of a valid case can often be obtained. Many ES, myself included, have sought relief through chemical injury diagnosis rather than primarily EMF injury. Remember, where there are EMFs there are also, minimally, low levels of toxic chemicals which are pervasive and everywhere in the "normal" workplace, home and public environment.

The coincidental symptoms of EMF/ES hypersensitivities and many chemical injury "reactions" are too similar to be ignored: nausea, brain fog (impaired mental acuity, inability to concentrate or think), difficulty with verbal expression, headaches, muscle and joint aches, GI (gastrointestinal) problems, stabbing pains and severe fatigue.

Personal computers, besides being a primary EMF work source for most people of ELFs (extremely low frequencies) and RFs (radio frequencies) are also a tremendous source of chronic low level exposures to toxic chemicals and heavy metals. Among heavy metals in computers are lead from picture tubes, solder and capacitors, mercury from batteries, relays and contact breakers, and cadmium from rechargeable batteries and display screens.[1] Chemicals outgassed from computers include brominated fire retardants from printed circuit boards and casings, chloroparaffins from molded polyvinyl chlorides (PVCs) and PCBs (polychlorinated biphenyls) from older capacitors.[1] This outgassing occurs as the machine is turned on. Warmth releases small amounts of chemicals into the air we breathe.[2] Other common office chemicals are formaldehyde, phthalates, and trichloroethylene, which can all produce chemical sensitivity symptoms.[3,4]

In a secret IBM report published in Sweden's *The Computer World* (October 25, 1990) about fifty substances had been traced in the air in the immediate vicinity of computer screens.[2] The U.S. government document, Federal Register, April 5, 1994, cites "Nervous system effects have also been produced due to exposure to poor indoor air quality. These effects include headache, blurred vision, fatigue, malaise with nausea, ringing in the ears, impaired judgement and polyneuritis. These effects are associated with exposure to carbon dioxide, carbon monoxide, formaldehyde, and VOCs (volatile organic compounds). Relevant reproductive effects include menstrual irregularities and birth defects and are associated with exposure to formaldehyde and VOCs."[5]

From Table III-2 of the Federal Register, Emissions from Appliances, Office Equipment and Supplies list, the chemicals include: n-Butanol, cresol, ethyl benzene, ozone, phenol, toluene, xylene, trichloroethylene, benzene, styrene, terpene, and others too numerous to list here.[4] Many of these chemicals are VOCs and most are also classified as neurotoxins.[3] A sample of six of these chemicals (benzene, phenol, styrene, toluene, trichloroethylene, and xylene) have symptoms such as decreased ability to concentrate, fatigue, headaches, liver disorders and injury, memory changes, muscle aches, nausea, DNA-, immune system-, and chromosomal-damage, abnor-

mal decrease in white blood cells, antibody formation, blood diseases, chemical hypersensitivity, central nervous system depression, dizziness, drowsiness, gastritis, and impaired judgement.[3]

Diagnostic testing for enhanced immune system reactions to chemicals can be done with an ELISA-/ACT test. Serammune Physicians Lab in Reston, VA (Address: 1890 Preston White Dr., Suite 201, Reston, VA 22091) has an Environmental Chemical Panel and a Toxic Minerals Panel (includes mercury, lead, cadmium). This is a blood test and measures delayed type hypersensitivity responses. The first time this writer took the ELISA/ACT, I tested positive to three chemicals which outgas from computers, two of which I had severe reactions to. Many chemical reactions were "coincidentally" related to the symptoms of EMF I experienced. The ELISA-/ACT can establish the link between delayed immune system assaults and "untreatable" illness. A comprehensive test to 300 foods and chemicals is also available. The test measures delayed reactions of Humoral (Type II), Immune Complex (Type III) and Cellular (Type IV). For information on testing, your physician should contact the lab at (800) 553-5472 or (703) 758-0610. Unless you are a medical practitioner, please do not call them directly. They will defer contact to your physician. The test has a standard CPT code for medical insurance reimbursement and is now Medicare reimbursable.

Remember, the effect of chemicals is enhanced by radiation. This synergistic effect can be one of the reasons why most of the EMF sensitive seem to also be chemically sensitive.

Of additional interest in obtaining medical diagnosis, especially with the chemically hypersensitive, has been the usage of porphyria testing. Porphyria is a recognized medical disorder. "The term porphyria refers specifically to a group of diseases in which cells in the liver and/or bone marrow (primarily) are unable to properly carry out all the steps involved in making heme...When the heme-making pathway is disrupted in this way due to inherited or acquired enzyme deficiencies, the excess porphyrins which are incompletely metabolized start to accumulate in certain body organs where they can have toxic effects.", per MCS Referral and Resources.[6,8]

In Dr. Gordon Baker's 1994 article entitled "Porphyria and MCS Overlap Symptoms" he said, "The acquired porphyrias may be considered to be the result of an environmental insult or poison on either (1) a genetically predisposed individual or, (2) a previously normal individual with no familial history or predisposition for this disease."[7] Drugs, chemicals, infections and malnutrition are among the causes of acquired porphyria. There are at least 50 environmental porphyrogenic substances including lead, paints, vinyl chloride, PCBs, and estrogen mimicking chemicals.[7] Other known or suspected porphyrogenic substances (list compiled by the Chemical Injury Information Network) include cadmium, mercury and styrene.[8] These are all chemicals emitted from office equipment.

Porphyria has been typically associated with photosensitivity. I was told by my hematologist that I do not show the classic symptoms of porphyria. I do not have photosensitivity to natural outside daylight. I do have photosensitivity to distorted light sources such as typical office fluorescents and yellowish incandescents as well as the light from computer screens. Because of my light sensitivity under certain conditions, I was intrigued with the porphyria testing and initially had a general overall blood test. Because light is an electromagnetic field and I had light and EMF sensitivities and chemical sensitivities, for me the porphyria connection made sense. I tested positive.

Porphyrin disorders, though considered rare, are widely accepted by the medical community unlike EI/MCS/ES. The diagnostic need for detailed biochemical testing is well established in medical literature. MCS Referral and Resources publishes a "Protocol for Evaluating Disorders of Porphyrin Metabolism in Chemically Sensitive Patients". This is available for $18.00 (Address: 2326 Pickwick Rd., Baltimore, MD 21207-6631). This packet contains a five page porphyria fact sheet, patient testing instructions and questionnaire, physician guidelines for test ordering and interpretation, lab request form, interpretive tables and a list of porphyrogenic substances.[8] While testing can be done at many labs, the Mayo Labs have the most sophisticated testing protocol.

Many EI/MCS patients are turning to the porphyria tests for medical validation and acceptability of their disability. (Not all EI/MCS patients test positive however.) The test appears to be a tool that the ES can also utilize, especially those with chemical hypersensitivities.

Given that (1) porphyria is commonly associated with light sensitivity, (2) electromagnetic fields are in the invisible part of the same electromagnetic spectrum as light, and (3) chemicals are enhanced by radiation, it would make sense that for those seeking medical documentation for injury or disability purposes, pursing the chemical and/or porphyria connection can make good sense from a diagnostic standpoint. And, most important, hopefully it can be an assist to those seeking medical validation for the

EMF and EI/MCS disabled.

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(***Editor's note***: Sweden's National Institute of Occupational Health found a link between electrical sensitivity and porphyria as reported in their magazine article entitled "One of seven sensitive to electrical fields", April 1992:

> "Most of those who are hypersensitive experience the problems in connection with work at display terminals, but other sources can also be named: fluorescent lights or electrical wiring and machinery... People with a tendency to develop allergies may be more likely to be hypersensitive to electricity. In one group of hypersensitive workers, about six of ten were allergic to various kinds of pollen and chemical substances... Another metabolic disturbance that has attracted interest is porphyrinuria. This disorder is due to a disturbance in the breakdown of hemoglobin. The most characteristic symptom is sensitivity to light. 'Many people who are hypersensitive to electricity are sensitive to light—so sensitive that they can't stand anything brighter than a candle,' says Knave." (Professor Bengt Knave, MD who led the study.)

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Concerned Over Computers

Andrew Bairden - USA

Marija Hughes is so concerned about the dangers from video display terminals that at an international conference she submitted a 16-page, single-spaced presentation entitled, "Computer-related Electromagnetic Sensitivity: A New Occupational Hazard".

Marija, who works for a US government agency in Washington DC, holds three Masters degrees: Library Science, Health Care Administration and Management Information Science. She traces her extensive health problems back to 1988 when she worked at a computer terminal in a small room that contained five other terminals. Marija maintains that she is a victim of electromagnetic radiation and has all the symptoms that are associated with radiation exposure.

Upon exposure to computers and other electronic devices, Marija's symptoms include hair loss, headaches, earaches, eye problems, facial rashes, bleeding gums, sore throat, chest pains, heart palpitations, cystitis, and swollen fingers.

She has consulted with many medical specialists and computer experts. According to her documented findings, exposure to radiation at work could easily account for her continuing health problems. (To prove her point, she compiled a two-volume set entitled Computer Health Hazards.*) She found herself extremely sensitive to electronic devices (copiers, printers, etc.), neon light, fluorescent lighting, sunshine, and television. Even certain smells now produce a negative reaction.

When Marija found herself incapable of working in her office environment, she reported her condition to her superiors and started on a long battle to prove her case. She ran into difficulties finding people who would believe that her health problems stemmed from radiation exposure. A couple of times she went on unpaid medical leave but eventually returned to work and persevered with her declining health.

Presently, Marija is feeling better, but she knows she's not cured. She settled with her governmental employer and has returned to work in vastly different surroundings. In order to return to work, Marija was able to negotiate several concessions to electrical sensitivities. She now works in a small office

that is insulated against sound; a computer in an adjoining office was removed. She uses a typewriter instead of a computer, is allowed to bring her own phone and heater to the office, is partially reimbursed for purchase of an air purifier, and has been granted leave if her office is to be painted.

* Her extensive bibliographic works Computer Health Hazards, Vol. 1 and 2 can be obtained from Hughes Press, 2400 Virginia Avenue NW, Box C501, Washington, DC 20037 for $24.00 each plus postage ($3.00 per book U.S./$10.00 each foreign).

(The 2nd International Denmark Electromagnetic Hypersensitivity conference proceedings of May 1995 which includes Marija's paper is available from Weldon Publishing, PO Box 4146, Prescott AZ USA for $8.00 or by ordering directly from the Danish Association for the Electromagnetically Hypersensitive, c/o Aase Thomassen, Lunden 1, Ålum, DK-8900 Randers, Denmark. Price: 210 DKK. Send them an international money order in Danish kroner.)

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EMF Diary - Sweden

Leif Södergren

August 19, 1995

ELECTROSMOG

DAGENS NYHETER, a large daily newspaper, in their monthly supplement called "SEPTEMBER", an article by Gunnar Lindstedt.

The article tells of one man working at the Stockholm stock exchange who has become electrically sensitive from his work at VDTs, and about the electrical sanitation carried out by LIBEREL AB. This company built entire shielding modules which house the many VDTs used. On the outside of the modules is nice looking wood. On the inside, there is grounded metal sheeting. In front, there are large sheets of grounded glass. The grounded metal and the grounded glass eliminate virtually all the electric emissions. There is also an exhaust and cooling system that takes the chemical emissions from the VDTs away from the workplace. Many of the people affected have reported great improvements in health after the installation.

October 23, 1995

ELECTROMAGNETIC RADIATION FROM CARS AND FREE RADICALS

This subject was brought up in a seminar at Gothenburg, Sweden, arranged by FEB-West (a local organization of the Association for the VDT and electrically injured). Anders Sihlbom at the Factory Technical Research Institute (Verkstadsteknisk Forskning, Gothenburg) talked about how easily car manufacturers could remedy the very strong electromagnetic fields found in cars. The newer and more exclusive the cars are, the more electromagnetic fields.

This is nothing new to the electrically sensitive who experience great difficulties in driving cars. They prefer older, simpler ones. The best are usually older diesel ones, with the generator turned off. German cars have a "good reputation" among electrically sensitive. This is probably due to stricter German law regarding EMC (electromagnetic compatibility).

A representative from SKANDIA, the largest insurance company in Scandinavia, Mr. Hans-Olof Olsson talked about how the company dealt with the 125 electrically sensitive individuals (out of a total of 4,000 employees). SKANDIA accepts the connection between electromagnetic fields from VDTs and electrical sensitivity and they help their employees as much as they can. They rebuild VDTs, carry out electric sanitation and have in some cases bought specially handmade DC-current computers/-VDTs. They do all they can when people get sick and also, take some preventive measures. But primarily, they act when someone gets sick. The company is unique in that it has a central handling of all local cases which means a better knowledge. It also has a special policy for electrical sensitivity. (Address: Skandia, 103 50 Stockholm.)

Local managers who are skeptical, are told to take the injured seriously.

Professor Per Arne Öckerman, talked about his preliminary findings that electrically sensitive people have poor defense against free radicals. When exposed to electromagnetic fields he has observed a lower immune response among the electrically sensitive. He recommends the use of antioxidants. Even though they do not "cure" electrical sensitivity, they are helpful against free radicals which are harmful.

Swedish Technology

Lucinda Grant

Leif Södergren in Sweden sent us the following photographs to show how Swedish technology has advanced to accommodate the electrically sensitive. In Photo 1 (page 12) the back of a computer monitor (VDT) is encased in wood. The VDT is in a shielded, grounded metal box with grounded glass on the computer screen. The computer and VDT use "clean" direct current (DC)—not pulsed—electricity. A transformer in another room (for distance) converts alternating current (AC) to DC. (See Photo 2, right, page 12.) An earlier, less sophisticated computer system for the ES was powered by a 12-volt car battery. A glass optic filter is also installed in the other room to stop interference from the local area network (LAN). (See Photo 2, left, page 12.) His keyboard is made of grounded metal. The VDT and keyboard are the only equipment in his room at work. His employer paid $15,000 USD for this special computer system and he is one of the first in Sweden to use this type of equipment.

Leif: "I can work, but I am not free from ES. I cannot work in the 'office landscape' with the others. I have two empty rooms on each side and on top, no computers below and no fluorescent lights, only shielded (grounded ordinary bulb) lamps." He says this office arrangement is low in electric and magnetic fields but feels there is a need for radio frequency reduction. Those ES who are highly sensitive cannot use this computer system.

In contrast, most Americans have not heard of Sweden's MPR2 or TCO computer monitor radiation standards. Monitors sold in the U.S. generally meet MPR2 now but you must search for those that meet TCO. There are no electric or magnetic regulations on American monitors and reductions are done voluntarily by computer manufacturers. As the Swedish will tell you, even TCO standards are not enough protection to halt new ES cases there.

Other office modifications in Sweden include a grounded metal desk lamp with a shielded, grounded cord and fluorescent lights encased in a metal frame with a metal grid over the front, all grounded. (See Photo 3, page 13.) Leif has a wooden desk at work, rather than metal which can draw and transmit EMFs.

For the home, a television box is available. (See Photo 4, page 13.) Leif stated that the TV box does not use mu metal (a highly magnetizable metal composite, like nickel/iron alloy, used to reduce magnetic fields). Aluminum is used for grounding the unit. At the back, the grounded metal has openings for heat release. Grounded glass covers the screen. Sound comes through grounded, perforated metal. According to Leif, the TV box stops the high frequency electric fields (not magnetic). He measured the magnetic field emissions from the TV and situated his chair beyond the measurable range of magnetic emissions. This TV cabinet costs about $1,000 USD and holds both the TV set and video cassette recorder (VCR).

What happens when a person becomes ES at work in Sweden? Leif: "Here, if you get sick, you do not quit, you go on sick pay. Then the National Insurance will request a rehabilitation program from your company (like I had) and they are obliged by law to issue such a program. If you cannot be rehabilitated, you usually end up with a lifetime sick pension (75% of your salary), but this is probably being phased out as Sweden is scaling down on their social system." Thank you Leif for sharing your world with us!

Reasonable Accommodation of the Electrically Sensitive in the Workplace

Lucinda Grant

What happens in America when someone becomes electrically sensitive (ES) in the workplace? Historically, the person found no medical, legal, or employment assistance to support their position, continuing to work under the same conditions became unbearable, and eventually the person quit their job to seek other work—sometimes work entirely different from their career and educational qualifications.

What is wrong with this picture? With ES, the usual safeguards of worker's compensation, Social Security disability, and private disability insurance are often unattainable. This is especially true when no medical documentation is available. Some doctors now recognize electrical sensitivity, although they are in the minority. The overriding question is whether the ES person is well enough to work now or in the foreseeable future.

Despite the problems of access to disability programs, if the ES person is well enough to work in an environment suited to his/her individual limitation, the Americans with Disabilities Act (ADA) may be a